**Centers of Academic Excellence
in Geospatial Sciences
Program Criteria**
*Jointly Sponsored by the National Geospatial-Intelligence Agency (NGA)
and the United States Geological Survey (USGS)*

Eligibility

All regionally accredited two-year, four-year and graduate level institutions in the United States (US) can apply for designation as a NGA/USGS Center of Academic Excellence in Geospatial Science (CAE GS).

Submission Process

Institutions must clearly demonstrate how the institution meets the requirements for the CAE designation on its application and include supporting documentation where required and appropriate. The CAE GS application must be completed online as described on the NGA CAE application website. The institution must also attach a PDF copy of a letter on official institution letterhead, signed by a collegiate official at an appropriate level (Dean or higher) and addressed to: *Lenora Peters Gant, Ph.D. Senior Executive for Academic Outreach & STEM/NGA* stating the institution's intent to apply for CAE GS designation (do not mail a hard copy)

Requirements

NGA/USGS CAE GS Two-year Education (CAE GS 2Y):

Applicable to regionally accredited two-year community colleges, technical schools, state or federally endorsed training centers or U.S. Government training centers.

The criteria include:
- Demonstration of all seven program criterion as described in the NGA-USGS CAE for Geospatial Sciences Program Metrics and Evaluation Criteria (also see the NGA-USGS CAE for Geospatial Sciences Program Evaluation Criteria Checklist)
- Successful mapping of the institution's curriculum to all Core Knowledge Unit (KUs) (See Figure 1)
- Baccalaureate and Graduate institutions must also map their curriculum to a minimum of Five *Optional* Knowledge Units, which are the KU's aligned under the Focus Areas (See Figure 1)
- Any Baccalaureate or Graduate institution that maps their curriculum to *all* Knowledge Units in any one Focus Area (See Figure 1), may request to add that Focus Area to their designation (E.g. NGA-USGS CAE in Geospatial Sciences with a Focus in Remote Sensing)

2014 NGA/USGS Centers of Academic Excellence in Geospatial Sciences Program Guidance

Figure1. *Matrix of Focus Areas and Knowledge Units*

CORE	Focus Areas						
	Geospatial Analysis	Cartographic Sciences and Geovisualization	Remote Sensing/ Imagery Science	Photogrammetry	Information Science	Aeronautical Analysis	Navigation and Location
Geo-Referencing Systems	Geospatial analytic reasoning and problem solving fundamentals	Foundations of Cartography	Remote Sensing Collection Platforms	Photogrammetric Theory	Spatial Applications of Big Data	Airspace Analysis	Geodesy
Spatial Data Fundamentals	Foundations of Spatial Thinking	Mapping and Design Principles	Radiometry	Photogrammetric Application	Advanced Spatial Analysis Through Programming	Airway Analysis	Fundamentals of the Global Positioning System (GPS) and the Global Navigation Satellite System (GNSS)
Remote Sensing Fundamentals	Geometric Measures	Extraction and Generalization of Geospatial Data for Geographic Visualization and Cartography	Electro-Optical (EO) Sensor Science	Close Range Photogrammetry	Spatial Query Operations and Query Language	Airfield Analysis	
Spatial Data Management	Analysis of workflow in project management	Integration of Geospatial Information Sources	Thermal Remote Sensing	Mathematics, Statistics, and Optimization		Flight Procedure Analysis	
Geospatial Data Standards	Analysis of topographic or field-based data		Basic RADAR Science	Digital Photogrammetry			
Effective Visual Communications of Spatio-temporal information	Geostatistics and Spatial Econometrics		Advanced RADAR Science	Digital Image Processing			
Professional Ethics in Geospatial Inforation Science and Technology	Network Analysis		Lidar Data Collection and Processing	Digital Image Processing			
Geospatial Analysis	Optimization and location-allocation Modeling		Remote Sensing Data Analysis	Computational Radiometry			
Errors in Geospatial Information	Spatial Data Integration			Imagery Time Series Analysis			

NGA/USGS CAE in GS Education Four-year (CAE GS):

Applicable to regionally accredited four-year colleges, graduate-level universities, and DoD schools.

The criteria include:
- Demonstration of all seven program criterion as described in the NGA-USGS CAE for Geospatial Sciences Program Metrics and Evaluation Criteria
- Successful mapping of the institution's curriculum to all of the Core KUs, and five (5) Optional KUs of the institution's choice. (See 2014 CAE GS KUs)

NGA/USGS GS Focus Area (Optional)

The Focus Areas for the CAE GS are designed to reflect institutions that not only meet the core KUs, but also meet all optional KUs in a single Focus Area (FA), such as Remote Sensing or Cartographic Sciences. The US government has significant interest in students who have deep expertise in these technical areas, and would like to specifically identify those institutions that offer and graduate students with a deep GS knowledge base.

The list of Focus Areas is:

- Geospatial Analysis
- Cartographic Science
- Remote Sensing/Imagery Science
- Photogrammetry
- Information Science
- Aeronautical Science
- Navigation and Location

All Four-year college/university applicants to the CAE in GS have the option to apply for one or more Focus Area designations, but the institution **must specifically identify** the Focus Area(s) of intent.

The criteria include:

- Successful meeting of all requirements for the CAE GS designation (i.e. meeting all core KUs and at least 5 optional KUs).
- In addition to the basic requirements, successful mapping of the institutions curriculum to all of the KUs identified in the FA. (Meeting all KUs in a FA, also counts toward the 5 optional KUs needed for meeting the basic requirements)
- Demonstration that a student can reasonably complete the necessary course of study to include all KUs identified in the FA
- By year the end of the second year of being a designated CAE for Geospatial Sciences, the institution must provide student certificates or acknowledgement on their student transcript to those that complete the FA course of study. The certificate or transcript acknowledgement must clearly identify the specific Focus Area achieved.

The value of the Optional Focus Area designation includes:

- Differentiation among institutions for marketing purpose
- Allows students who wish to study in a specific area the ability to make an informed decision
- Provides hiring managers the ability to recruit from institutions more efficiently to find skills needed for their line of business
- Fosters and encourages further development of strong GS focused education and research depth at US institutions

Available Tools

The following tools are available to assist in gathering the information needed to map to the KU's. By using the checklists and matrices, you can ensure submitting a complete application. Additionally, these tools help the reviewers find the right materials to meet the evaluation criteria more rapidly, thereby ensuring evaluators don't miss parts of your submission that are relevant to meeting required criteria:

1. Program criterion checklist
2. Core KU matrix and reviewer checklist
3. Optional KU matrix that also show alignment to Focus Areas

Program Evaluation:

CAE Program Office staff will lead coordination of the evaluation processes. The evaluation of institutions' submissions with be conducted by Subject Matter Experts. As an option, the last phase of the criteria may be (at NGA and USGS's discretion) an on-site evaluation focused on course content, course relevance, facilities and technical

resources, and faculty involvement. If that option occurs, the institution will be contacted no less than one month in advance of a visit, should NGA and USGS deem the visit warranted based on the initial evaluation of the application submission. A checklist of the requirements is provided at the end of this document to assist in ensuring complete submissions for evaluation.

Application Schedule

- Institutions can apply for the 2015 Year CAE GS designation between November 1, 2014 and February 28, 2015. All applications must be submitted by February 28, 2015 to be considered for designation in the spring of 2015. The 2016 Year designation program will commence on 1 November 2015.

2014 NGA/USGS Centers of Academic Excellence in Geospatial Sciences Program Guidance

Knowledge Unit, Focus Area, and Criteria Update Process

- Anyone may propose updates to the KUs, FAs, and CAE Criteria at any time. Email them to academia@nga.mil.
- A joint academia/industry/government panel will review proposed changes on an annual basis. Volunteers for this panel will be solicited from the CAE Community, industry, and government.
- Changes will take effect annually, beginning with the cycle starting in November 2015.

Please direct NGA/USGS CAE GS program questions or concerns to academic@nga.mil.